

Fault Code List OBDII
ULEV/LEV (MY01)

DME: MS43 (Siemens), ME7.2 (Bosch), M5.2.1 (Bosch)
Engines: M54, M62LEV, M73LEV

M54	M62	M73	FC dec	FC hex	Fault Type and Function	OBDII Requirement type of test	Signal type Signal range Detection of	Input/Output	Explanation
	X	X	1	1	EVAP: LDP Valve - Final Stage	Final stage check	Output digital on/off (active low)	LDP	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. Occurs
X			1	1	Ignition Coil Cyl. 2	Ignition feedback	Input analog 100 mV Timing	Ignition Shunt Resistor	The DME initiates the secondary ignition for each cylinder then looks for the feedback through the shunt resistor in the harness to determine if the ignition actually occurred.
		X	2	2	Running losses valve - Final stage	Final stage check	Output digital pulse width (active low)	Running losses -valve	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. Occurs
X			2	2	Ignition Coil Cyl. 4	Ignition feedback	Input analog 100 mV Timing	Ignition Shunt Resistor	The DME initiates the secondary ignition for each cylinder then looks for the feedback through the shunt resistor in the harness to determine if the ignition actually occurred.
		X	3	3	EVAP: Reed Switch not closed, doesn't open or doesn't close	EVAP monitoring	Input digital 0-12V on/off	LDP reed contact switch	Within a predetermined time the LDP reed switch signal has to change from high to low or from low to high or LDP reed switch is "low" for longer then the predetermined time.
X			3	3	Ignition Coil Cyl. 6	Ignition feedback	Input analog 100 mV Timing	Ignition Shunt Resistor	The DME initiates the secondary ignition for each cylinder then looks for the feedback through the shunt resistor in the harness to determine if the ignition actually occurred.
	X		2	2	EVAP: DMTL Valve - Final Stage	Final stage check	Output digital on/off (active low)	DMTL	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. Occurs
	X		3	3	Swapped O2 Sensors Pre Cat.	O2-Sensor check	DME internal Value logical	O2-Sensor	Fault will set if the fuel control from one bank reaches the rich threshold while the other bank reaches the lean threshold.
	X		4	4	O2-Sensor-Heater, Post Cat.(Bank2), final stage and insufficient heating.	Final stage check	Output digital pulse width (active low)	O2 Sensor Heater	The final stage is monitored for proper voltage drop: output on u <= 3.6 V; output off u >= 2.34 V; heater power is checked by the inner resistance of the sensor which represents the sensor
		X	4	4	O2-Sensor-Heater, Post Cat.(Bank2), Insufficient Heating.	Final stage check	Output digital pulse width (active low)	O2 Sensor	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs
	X		5	5	O2-Sensor-Heater, Pre Cat.(Bank2), final stage and insufficient heating.	Final stage check	Output digital pulse width (active low)	O2 Sensor Heater	The final stage is monitored for proper voltage drop: output on u <= 3.6 V; output off u >= 2.34 V; heater power is checked by the inner resistance of the sensor which represents the sensor
X			5	5	Injector Circuit Cylinder 2	Final stage check	Output digital pulse width (active low)	Injector	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected component
		X	5	5	O2 Sensor Heater, Pre Cat.(Bank2), insufficient.	Final stage check	Output digital pulse width (active low)	O2 Sensor	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs
X			6	6	Injector Circuit Cylinder 1	Final stage check	Output digital pulse width (active low)	Injector	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected component

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		X	6	6	CAN-Timeout Instrument Cluster	Timing check	Input digital 0-12V Binary information	Instrument Cluster	The CAN message was not received within the expected time
		X	7	7	Engine coolant temperature, radiator outlet	Signal range check	Input analog 0-12V Voltage	temperature sensor on radiator outlet	Failed the Signal Range check against predefined diagnostic limits
		X	8	8	Misfire with low fuel detected	Misfire monitoring	DME internal values logical	Calculated	Misfire fault was recorded while the low fuel / reserve light in the instrument cluster was illuminated.
X			8	8	Mass or Volume Air Flow Circuit, Range/Perf.	Signal range check	Input analog 0-5V Voltage	HFM	Failed the Signal Range check against predefined diagnostic limits
	X	X	10	0A	O2 Sensor Pre Cat. (Bank1)	O2-Sensor check	Input analog 0-1V (high is rich)	O2 Sensor	The oxygen sensor signal range is checked to determine if electrical faults exist on the sensor line.
X			10	0A	Engine Coolant Temp, Circuit Range/Perf.	Signal range check	Input analog 0-5V Voltage	Coolant Temp sensor	Signal Range is checked against the predefined diagnostic limits within specific engine operations.
X			11	0B	Coolant Temperature Cooler outlet	Signal range check	Input analog 0-5V Voltage	Coolant Temp sensor	Signal Range is checked against the predefined diagnostic limits within specific engine operations.
	X	X	12	0C	O2 Sensor Post Cat.(Bank1)	O2-Sensor check	Input analog 0-1V (high is rich)	O2 Sensor	The oxygen sensor signal range is checked to determine if electrical faults exist on the sensor line.
X			12	0C	Coolant Temperature maximal temperature plausibility	Temperature range check	DME internal values logical	Calculated	The temperature at engine start must be lower then at engine stop after delaytime
	X		13	0D	O2-Sensor-Heater, Pre Cat.(Bank1), final stage and insufficient heating.	Final stage check	Output digital pulse width (active low)	O2 Sensor Heater	The final stage is monitored for proper voltage drop: output on u <= 3.6 V; output off u >= 2.34 V; heater power is checked by the inner resistance of the sensor which represents the sensor
		X	13	0D	O2 Sensor Heater Circuit Pre Cat (Bank1)	Final stage check	Output digital pulse width (active low)	O2 Sensor	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs
	X		14	0E	O2-Sensor-Heater, Post Cat.(Bank1), final stage and insufficient heating.	Final stage check	Output digital pulse width (active low)	O2 Sensor Heater	The final stage is monitored for proper voltage drop: output on u <= 3.6 V; output off u >= 2.34 V; heater power is checked by the inner resistance of the sensor which represents the sensor
		X	14	0E	O2-Sensor-Heater, Post Cat. (Bank1), insufficient.	Final stage check	Output digital pulse width (active low)	O2 Sensor	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs
X			14	0E	Intake Air Temperature Range/Performance	Signal range check	Input analog 0-5V Voltage	IntakeTempsensor	Signal Range is checked against predefined diagnostic limits within specific engine operations.

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	X	X	15	0F	O2 Sensor Pre Cat. (Bank1) Slow Response time	O2-Sensor check	Input analog 0-1V (high is rich)	O2 Sensor	Checks the amount of time the oxygen sensor stays in its rich or lean state. If it remains too long in either rich or lean condition, the fault will set.
	X		17	11	O2 Sensor Post Cat. (Bank1) Activity	O2-Sensor check	Input analog 0-1V (high is rich)	O2 Sensor	If engine is in fuel cut off for a predetermined time the sensor voltage must be below 200 mV. If trim control is active the sensor voltage must change.
		X	17	11	O2 Sensor Post Cat. (Bank1), Slow Response time	O2-Sensor check	Input analog 0-1V (high is rich)	O2 Sensor	Checks the amount of time the oxygen sensor stays in its rich or lean state. If it remains too long in either the rich or the lean condition, the fault will set.
	X	X	18	12	O2 Sensor Pre Cat. (Bank2)	O2-Sensor check	Input analog 0-1V (high is rich)	O2 Sensor	The oxygen sensor signal range is checked to determine if electrical faults exist on the sensor line.
X			18	12	Camshaft Position Sensor exhaust cam, Malfunction	Rationality check	Input analog 0-5V phase shift	CAM sensor	Internal check of the phase shift from the cam sensor which should change during every crankshaft revolution. The phase shift occurs due to the 2:1 mechanical relationship between cam
X			19	13	VANOS-Magnetical valve; exhaust side	Final stage check	Output digital pulse width (active low)	VANOS-Solenoid exhaust	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected component
		X	19	13	CAN Signal, Timeout EKAT	Timing check	Input digital 0-5V Binary information	EKAT-ECU	The CAN message from the EKAT ECU was not received within the expected time
	X	X	20	14	O2 Sensor Post Cat. (Bank2)	O2-Sensor check	Input analog 0-1V (high is rich)	O2 Sensor	The oxygen sensor signal range is checked to determine if electrical faults exist on the sensor line.
X			21	15	VANOS-Magnetical valve; Intake side	Final stage check	Output digital pulse width (active low)	VANOS-Solenoid intake	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected component
	X	X	21	15	O2 Sensor Pre Cat. (Bank2) Slow Response time	O2-Sensor check	Input analog 0-1V (high is rich)	O2 Sensor	Checks the amount of time the oxygen sensor stays in its rich or lean state. If it remains too long in either the rich or the lean condition, the fault will set.
X			22	16	Injector Circuit Cylinder 3, Malfunction	Final stage check	Output digital pulse width (active low)	Injector	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected component
X			23	17	Injector Circuit Cylinder 6, Malfunction	Final stage check	Output digital pulse width (active low)	Injector	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected component
	X		23	17	O2 Sensor Post Cat. (Bank2) Activity	O2-Sensor check	Input analog 0-1V (high is rich)	O2 Sensor	If engine is in fuel cut off for a predetermined time the sensor voltage must be below 200 mV. If trim control is active the sensor voltage must change.
X			24	18	Injector Circuit Cylinder 4, Malfunction	Final stage check	Output digital pulse width (active low)	Injector	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected component

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	X		24	19	Fuel Trim at part load above threshold (Bank2) Multiplicative	Fuel system monitoring	DME internal values logical	Calculated	Range control of adaptation values
		X	24	18	AC Compressor Function	Rationality check	Input digital 0-12V on/off	IHKA	Fault will set if AC-Switch is off and Compressor Switch is on.
X			25	19	O2 Sensor Heater Circuit Pre Cat (Bank1)	Final stage check	Output digital pulse width (active low)	O2 Sensor	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected component
	X		25	19	Fuel Trim at part load above threshold (Bank2) Multiplicative	Fuel system monitoring	DME internal values logical	Calculated	Range control of adaptation values
		X	26	1A	Fuel Trim at part load (Bank1), Multiplicative	Fuel system monitoring	DME internal values logical	Calculated	Range control of adaptation values
	X		26	1A	Fuel Trim at part load below threshold (Bank1) Multiplicative	Fuel system monitoring	DME internal values logical	Calculated	Range control of adaptation values
X			27	1B	Idle Control Valve Closing Coil, Malfunction	Final stage check	Output digital pulse width 120Hz (active low)	Idle control valve	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected component
		X	27	1B	Fuel Adaptation Additive at idle air leak (Bank 1)	Fuel system monitoring	DME internal values logical	Calculated	Range control of adaptation values
	X		27	1B	Fuel Trim at part load below threshold (Bank2) Multiplicative	Fuel system monitoring	DME internal values logical	Calculated	Range control of adaptation values
	X	X	28	1C	Fuel Trim (Bank1) Additive	Fuel system monitoring	DME internal values logical	Calculated	Range control of adaptation values
		X	29	1D	Air containment valve for air control of shrouded fuel Injector (Bank 1)	Final stage check	Output digital on/off (active low)	air containment valve	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs
X			29	1D	Ignition Coil Cyl. 1	Ignition feedback	Input analog 100 mV Timing	Ignition Shunt Resistor	The DME initiates the secondary ignition for each cylinder then looks for the feedback through the shunt resistor in the harness to determine if the ignition actually occurred.
	X		29	1D	Fuel Trim (Bank2) Additive	Fuel system monitoring	DME internal values logical	Calculated	Range control of adaptation values
X			30	1E	Ignition Coil Cyl. 3	Ignition feedback	Input analog 100 mV Timing	Ignition Shunt Resistor	The DME initiates the secondary ignition for each cylinder then looks for the feedback through the shunt resistor in the harness to determine if the ignition actually occurred.

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		X	30	1E	EKAT-Status 7 - power switch control	Electrically heated catalyst check	Input digital binary information from CAN	EKAT-ECU	Set by the EKat ECU, if an internal generated voltage in the EKat ECU drops below threshold
X			31	1F	Ignition Coil Cyl. 5	Ignition feedback	Input analog 100 mV Timing	Ignition Shunt Resistor	The DME initiates the secondary ignition for each cylinder then looks for the feedback through the shunt resistor in the harness to determine if the ignition actually occurred.
	X	X	32	20	Idle Control	Rationality check	DME internal values logical	Idle control	Plausibility check between the actual engine speed and the predetermined engine speed. Fault will set if not within the desired RPM range (+200/-100 rpm)
	X		33	21	VANOS System Malfunction Bank 1	Rationality check	DME internal values logical	VANOS unit camshaft sensor wheel	The VANOS system is monitored for mechanical faults (slow response) by the time it takes to reach the target position;The position of the sensor wheel is checked by comparison of cam
X			33	21	Injector Circuit Cylinder 5, Malfunction	Final stage check	Output digital pulse width (active low)	Injector	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected component
		X	33	21	EKAT-Status 8 - EKAT-ECU	Electrically heated catalyst check	Input digital binary information from CAN	EKAT-ECU	Set by the EKat ECU, if an checksum error is detected
	X		34	22	VANOS System Malfunction Bank 2	Rationality check	DME internal values logical	VANOS unit camshaft sensor wheel	The VANOS system is monitored for mechanical faults (slow response) by the time it takes to reach the target position;The position of the sensor wheel is checked by comparison of cam
		X	34	22	Fuel Trim (Bank2), Multiplicative	Fuel system monitoring	DME internal values logical	Calculated	Range control of adaptation values
X			35	23	Secondary Air Injection System , el. Pump	Final stage check	Output digital on/off (active low)	Air pump	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected component
		X	35	23	Fuel Adaptation Additive at idle air leak (Bank 2)	Fuel system monitoring	DME internal values logical	Calculated	Range control of adaptation values
		X	36	24	Fuel Trim at idle (Bank2), Additive	Fuel system monitoring	DME internal values logical	Calculated	Range control of adaptation values
X			36	24	Malfunction main relay	Analog monitoring of main relay power circuit	Input analog 0-12V	main relay - ignition	Signal range check between DME ignition analog input and main relay power circuit analog input
X			38	26	Clutch switch faulty	Plausibility check	Input digital 0-12V	Clutch switch	Plausibility check of clutch switch an DME internal values like load and engine speed
X			39	27	plausibility between breaklight and breaklight test switch	Rationality check	Input digital 0-12V	Breaklight switch	Whenever the breaklight switch is active, the breaklight test switch must be also active. If not then this fault is stored

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	X	X	39	27	EWS Content of Message	Manipulation Check	Input binary stream 0-12V Bit information	EWS	The content of the binary message received from EWS was invalid
	X	X	40	28	Catalyst Efficiency Bank 1 Below Threshold	Catalyst monitoring	Input analog 0-1V Voltage	O2 Sensor pre/post catalyst	Compares the value of the pre cat O2 sensor to value of the post cat O2 sensor to measure the oxygen storage capability / efficiency of the catalytic converter. The post O2 sensor must be
		X	42	2A	EKAT-Status 1 - Disabling of heater for Catalyst 1	Electrically heated catalyst check	Input digital binary information from CAN	EKAT-ECU	Set, if the EKat ECU detects an electrical error of heater 1 (disconnection, low voltage befor / during heating, short circuit)
X			42	2A	Signal multi functional steering wheel, redundant code transmission	Rationality check	Input binary stream 0-12V	Multi functional steering wheel Cruise control switch	Every signal from the cruese control switch is transferred redundantly coded. A Fault is set, whenever the two redundant information paths are showing a different status.
X			43	2B	Signal multi functional steering wheel, control switch	Rationality check	Input binary stream 0-12V	Multi functional steering wheel	When the status from cruise control showing set/accelerate and deceleration at the same time, then a fault is set.
		X	43	2B	EKAT-Status 2 - heater power for Catalyst 1	Electrically heated catalyst check	Input digital binary information from CAN	EKAT-ECU	Set by the EKat ECU, if heater power of heater 1 drops below threshold
		X	44	2C	EKAT-Status 3 - power switch Catalyst 1	Electrically heated catalyst check	Input digital binary information from CAN	EKAT-ECU	Set, if the EKat ECU detects overtemperature of power switch for Catalyst 1or range check error of the temperature sensor
X			45	2D	Signal multi functional steering wheel, toggle-bit	Time out check	Input binary stream 0-12V	Multi functional steering wheel	every 0.5 sec. a message that includes a toggle bit (toggles between 0->1 and 1->0) is transmitted. The change of this bit is monitored and it indicates proper functionality.
	X	X	45	2D	Catalyst Efficiency Bank 2 Below Threshold	Catalyst monitoring	Input analog 0-1V Voltage	O2 Sensor pre/post catalyst	Compares the value of the pre cat O2 sensor to value of the post cat O2 sensor to measure the oxygen storage capability / efficiency of the catalytic converter. The post O2 sensor must be
		X	46	2E	EKAT-Status 4 - Disabling of heater for Catalyst 2	Electrically heated catalyst check	Input digital binary information from CAN	EKAT-ECU	Set, if the EKat ECU detects an electrical error of heater 2 (disconnection, low voltage befor / during heating, short circuit)
		X	47	2F	EKAT-Status 5 - heater power of Catalyst 2	Electrically heated catalyst check	Input digital binary information from CAN	EKAT-ECU	Set by the EKat ECU, if heater power of heater 1 drops below threshold
X			47	2F	Torque monitoring level 1	Rationality check	DME internal values logical	Calculated	
		X	48	30	EKAT-Status 6 - power switch catalyst 2	Electrically heated catalyst check	Input digital binary information from CAN	EKAT-ECU	Set, if the EKat ECU detects overtemperature of power switch for Catalyst 2 or range check error of the temperature sensor
X			48	30	Internal Control Module, Memory check sum or internal communication	DME HW Test Memory	DME internal values logical	Calculated	

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X			49	31	ECU internal test	DME HW Test	DME internal values logical	Calculated	
X			50	32	ECU internal test	DME HW Test	DME internal values logical	Calculated	
	X	X	50	32	Cylinder 1 Misfire detected	Misfire monitoring	DME internal values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 1 is longer the fault
		X	51	33	Cylinder 2 Misfire detected	Misfire monitoring	DME internal values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 2 is longer the fault
	X		51	33	Cylinder 8 Misfire detected	Misfire monitoring	DME internal values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 2 is longer the fault
X			51	33	ECU internal test	DME HW Test	DME internal values logical	Calculated	
X			52	34	Rear Exhaust Valve flap	Final stage check	Output digital steady (active low)	Valve for exhaust flap	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected component
		X	52	34	Cylinder 3 Misfire detected	Misfire monitoring	DME internal values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 3 is longer the fault
	X		52	34	Cylinder 6 Misfire detected	Misfire monitoring	DME internal values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 3 is longer the fault
X			53	35	Idle Control Valve Opening Coil, Malfunction	Final stage check	Output digital pulse width 120Hz (active low)	Idle control valve	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected component
		X	53	35	Cylinder 4 Misfire detected	Misfire monitoring	DME internal values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 4 is longer the fault
	X		53	35	Cylinder 3 Misfire detected	Misfire monitoring	DME internal values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 4 is longer the fault
		X	54	36	Cylinder 5 Misfire detected	Misfire monitoring	DME internal values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 5 is longer the fault
	X		54	36	Cylinder 2 Misfire detected	Misfire monitoring	DME internal values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 5 is longer the fault

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X			55	37	O2 Sensor Heater Circuit Pre Cat (Bank2)	Final stage check	Output digital pulse width (active low)	O2 Sensor	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected component
		X	55	37	Cylinder 6 Misfire detected	Misfire monitoring	DME internal values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 6 is longer the fault
	X		55	37	Cylinder 5 Misfire detected	Misfire monitoring	DME internal values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 6 is longer the fault
	X	X	56	38	Cylinder 7 Misfire detected	Misfire monitoring	DME internal values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 7 is longer the fault
X			56	38	Ignition Feedback, interruption at shunt resistor	Ignition feedback	Input analog 32V Voltage	Ignition Shunt Resistor	Check for correct signal voltage. If Voltage is 32V (Zener limitation voltage) than secondary ignition voltage is detected then there might be a problem with the shunt resistor in the
X			57	39	Knock Sensor 1 Circuit, (Bank 1)	Circuit continuitySignal range check	Input analog 13-19kHz Amplitude	Knock sensor	Plausibility Check between the knock sensor amplitude during knocking with the internal knock detection mapped DME values.
		X	57	39	Cylinder 8 Misfire detected	Misfire monitoring	DME internal values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 8 is longer the fault
	X		57	39	Cylinder 4 Misfire detected	Misfire monitoring	DME internal values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 8 is longer the fault
X			59	3B	Knock Sensor 2 Circuit, (Bank 2)	Circuit continuitySignal range check	Input analog 13-19kHz Amplitude	Knock sensor	Plausibility Check between the knock sensor amplitude during knocking with the internal knock detection mapped DME values.
X			61	3D	O2 Sensor Heater Circuit Post Cat (Bank2)	Final stage check	Output digital pulse width (active low)	O2 Sensor	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected component
X			62	3E	Secondary Air Inj. System Switching Valve	Final stage check	Output digital on/off (active low)	Air valve	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected component
	X	X	62	3E	Random/Multiple Cylinder Misfire detected	Misfire monitoring	DME internal values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for a cylinder is longer the fault will set.
		X	63	3F	Cylinder 1 Misfire detected, catalyst damaging	Misfire monitoring	DME internal values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 1 is longer the fault

Fault Code List OBDII
ULEV/LEV (MY01)

DME: MS43 (Siemens), ME7.2 (Bosch), M5.2.1 (Bosch)
Engines: M54, M62LEV, M73LEV

M54	M62	M73	FC dec	FC hex	Fault Type and Function	OBDII Requirement type of test	Signal type Signal range Detection of	Input/Output	Explanation
		X	64	40	Cylinder 2 Misfire detected, catalyst damaging	Misfire monitoring	DME internal values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 2 is longer the fault
X			65	41	Camshaft Position Sensor intake cam, Malfunction	Rationality check	Input analog 0-5V phase shift	CAM sensor	Internal check of the phase shift from the cam sensor which should change during every crankshaft revolution. The phase shift occurs due to the 2:1 mechanical relationship between cam
		X	65	41	Cylinder 3 Misfire detected, catalyst damaging	Misfire monitoring	DME internal values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 3 is longer the fault
		X	66	42	Cylinder 4 Misfire detected, catalyst damaging	Misfire monitoring	DME internal values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder41 is longer the fault
		X	67	43	Cylinder 5 Misfire detected, catalyst damaging	Misfire monitoring	DME internal values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 5 is longer the fault
X			68	44	EVAP System, Purge Control Valve Circuit	Final stage check	Output digital pulse width (active low)	purge valve	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected component
		X	68	44	Cylinder 6 Misfire detected, catalyst damaging	Misfire monitoring	DME internal values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 6 is longer the fault
X			69	45	Relay Fuel Pump	Final stage check	Output digital on/off (active low)	Relay fuel pump	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected component
		X	69	45	Cylinder 7 Misfire detected, catalyst damaging	Misfire monitoring	DME internal values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 7 is longer the fault
		X	70	46	Cylinder 8 Misfire detected, catalyst damaging	Misfire monitoring	DME internal values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 8 is longer the fault
		X	71	47	Cylinder 9 Misfire detected, catalyst damaging	Misfire monitoring	DME internal values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 9 is longer the fault
		X	72	48	Cylinder 10 Misfire detected, catalyst damaging	Misfire monitoring	DME internal values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 10 is longer the
		X	73	49	Cylinder 11 Misfire detected, catalyst damaging	Misfire monitoring	DME internal values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 11 is longer the
X			74	4A	Relay AC Compressor	Final stage check	Output digital on/off (active low)	Relay AC Compr.	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected component

Fault Code List OBDII
ULEV/LEV (MY01)

DME: MS43 (Siemens), ME7.2 (Bosch), M5.2.1 (Bosch)
Engines: M54, M62LEV, M73LEV

M54	M62	M73	FC dec	FC hex	Fault Type and Function	OBDII Requirement type of test	Signal type Signal range Detection of	Input/Output	Explanation
		X	74	4A	Cylinder 12 Misfire detected, catalyst damaging	Misfire monitoring	DME internal values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 12 is longer the
		X	75	4B	Random/Multiple Cylinder, Misfire detected	Misfire monitoring	DME internal values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for a cylinder is longer the fault
		X	77	4D	air containment valve for air control of shrouded fuel Injector (Bank 2)	Final stage check	Output digital on/off (active low)	air containment valve	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs
		X	78	4E	Crankshaft Position Sensor (too many teeth)	Rationality check	Input digital 0-12V Frequency/pattern	Crank sensor	Crank sensor signal reports that too many teeth were detected within one crankshaft revolution. The fault will set if more teeth was detected than the default value.
X			79	4F	O2 Sensor Heater Circuit (Bank1,Sensor2)	Final stage check	Output digital pulse width (active low)	O2 Sensor	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected component
	X		80	50	Secondary Air Control Bank 1	Secondary Air Delivery	Input analog 0-1V Voltage	O2 Sensor	Checks to see if the O2 sensor reacts to the increase in unmetered air flow generated by the secondary air pump operation. The O2 sensor must sense the lean condition or a
		X	80	50	Secondary Air Control	Secondary Air Delivery	Input analog 0-1V Voltage	O2 Sensor	Checks to see if the O2 sensor reacts to the increase in unmetered air flow generated by the secondary air pump operation. The O2 sensor must sense the lean condition or a
		X	81	51	EKAT-Status 9 - sensor check temperature sensor (1) in battery terminal	Electrically heated catalyst check	Input digital binary information from CAN	EKAT-ECU	Signal Range is checked against predefined diagnostic limits
	X		81	51	Secondary Air Control Bank 2	Secondary Air Delivery	Input analog 0-1V Voltage	O2 Sensor	Checks to see if the O2 sensor reacts to the increase in unmetered air flow generated by the secondary air pump operation. The O2 sensor must sense the lean condition or a
		X	82	52	EKAT-Status 10 - sensor check temperature sensor (2) in battery terminal	Electrical heated catalyst check	Input digital binary information from CAN	EKAT-ECU	Signal Range is checked against predefined diagnostic limits
		X	83	53	EKAT-Status 11 - plausibility check of temperature sensor in battery terminal	Electrical heated catalyst check	Input digital binary information from CAN	EKAT-ECU	Plausibility check between the two temperature sensors in the battery terminal
X			83	53	Crankshaft Position Sensor, Malfunction	Rationality check	Input digital 0-12V Frequency/pattern	Crank sensor	Checks for correct signal pattern and correct number of expected flywheel teeth.
	X	X	84	54	Relay for Secondary Air Pump Final stage	Final stage check	Output digital on/off (active low)	Relay for Secondary Air pump	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs
	X	X	85	55	Secondary Air Inj. System Switching Valve Final stage	Final stage check	Output digital on/off (active low)	Secondary Air valve	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs

Fault Code List OBDII
ULEV/LEV (MY01)

DME: MS43 (Siemens), ME7.2 (Bosch), M5.2.1 (Bosch)
Engines: M54, M62LEV, M73LEV

M54	M62	M73	FC dec	FC hex	Fault Type and Function	OBDII Requirement type of test	Signal type Signal range Detection of	Input/Output	Explanation
		X	91	5B	EVAP System, Purge Control Valve Circuit (Bank 2)	Final stage check	Output digital on/off (active low)	purge valve	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs
	X		93	5D	EVAP System Purge Control Valve	EVAP monitoring	DME internal values logical	purge valve	This functional check looks for the engine reaction during canister purging. It checks whether the fuel control or RPM values react to the purging of the canister.
	X	X	98	62	EVAP System Purge Control Valve Final stage	Final stage check	Output digital on/off (active low)	purge valve	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs
		X	100	64	Transmission/ coolant heat exchanger	Final stage check	Output digital on/off (active low)	Trans/coolant heat exchanger	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs
X			100	64	Internal Control Module, Memory check sum or internal communication	DME HW Test Memory	DME internal values logical	DME internally	Internal hardware test of RAM, ROM, and Flash Prom.
		X	101	65	Internal Control Module, RAM	DME HW Test Memory	DME internal values logical	DME internally	Internal hardware test of RAM, ROM, and Flash Prom.
	X		101	65	Internal Control Module, CPU	Rationality check	DME internal values logical	DME internally	Checks if the torque limitation works properly. If it does not the throttle is switched off.
		X	102	66	Internal Control Module, Keep Alive Memory	DME HW Test Memory	DME internal values logical	DME internally	Internal hardware test of RAM, ROM, and Flash Prom.
	X		102	66	Signal multi functional steering wheel, redundant code transmission	Rationality check	Input binary stream 0-12V	Multi functional steering wheel	Fault is set, when no signal is detected or when the transmission from the steering wheel is disturbed (timing check, single bit check)
X			103	67	VANOS faulty reference value intake	Rationality check	DME internal values logical	Crank-/Cam-sensor intake	The maximum VANOS adjustment angle, checked at every engine start must be within a specified limit.
		X	103	67	Internal Control Module, Memory check sum	DME HW Test Memory	DME internal values logical	DME internally	Internal hardware test of RAM, ROM, and Flash Prom.
	X		103	67	Internal Control Module, CPU	Rationality check	DME internal values logical	DME internally	Internal functional checks of the system
	X		104	68	Clutch switch faulty	Rationality check	Input digital 0-12V	Clutch Switch	The system detects the gear change by calculation of the ratio between engine and vehicle speed. If several gear changes are detected and there was no signal from the clutch switch a fault is
X			104	68	VANOS faulty reference value exhaust	Rationality check	DME internal values logical	Crank-/Cam-sensor exhaust	The maximum VANOS adjustment angle, checked at every engine start must be within a specified limit.

Fault Code List OBDII
ULEV/LEV (MY01)

DME: MS43 (Siemens), ME7.2 (Bosch), M5.2.1 (Bosch)
Engines: M54, M62LEV, M73LEV

M54	M62	M73	FC dec	FC hex	Fault Type and Function	OBDII Requirement type of test	Signal type Signal range Detection of	Input/Output	Explanation
		X	104	68	Internal Control Module, RAM	DME HW Test Memory	DME internal values logical	DME internally	Internal hardware test of RAM, ROM, and Flash Prom.
X			105	69	VANOS mechanically stuck (Bank1) intake	Rationality check	DME internal values logical	Crank-/ cam sensor	Monitoring of a desired VANOS adjustment within a predefined diagnostic time limit.
	X		105	69	Internal Control Module, RAM	DME HW Test Memory	DME internal values logical	DME internally	Internal hardware test of RAM.
		X	105	69	Internal Control Module, EEPROM	DME HW Test Memory	DME internal values logical	DME internally	Internal hardware test of RAM, ROM, and Flash Prom.
	X		106	6A	plausibility between breaklight switch and breaklight test	Rationality check	Input digital 0-12V	Breaklight switch	Whenever the breaklight switch is active, the breaklight test switch must be also active. If not then this fault is stored
X			106	6A	VANOS mechanically stuck (Bank2) exhaust	Rationality check	DME internal values logical	Crank-/ cam sensor	Monitoring of a desired VANOS adjustment within a predefined diagnostic time limit.
	X		107	6B	Internal Control Module, ROM	DME HW Test Memory	DME internal values logical	DME internally	Internal hardware test of ROM and Flash Prom.
		X	107	6B	Battery Voltage	Signal range check	Input analog Batt.Voltage Voltage	Battery Voltage	Check that proper battery voltage is present between 9 and 16 Volts. This check is not performed during cranking due to voltage drop.
	X		108	6C	Internal Control Module	Reset logic	DME internal values logical	DME internally	Internal functional checks of the system
		X	108	6C	Battery Voltage Disconnected	Rationality check	Input analog Batt. Voltage Voltage continuity	Battery Voltage	ECU internal test determines if the unit has been disconnected from battery power. This fault could be set by disconnection of the battery or control unit or wiring problem effecting B+ supply
X			109	6D	Motor throttle valve mechanically; pulse width not plausible	Rationality check	Output digital 0-12V pulse width	Motor Throttle Valve	The throttle position control algorithm checks for problems with the mechanical coupling spring within the motor throttle body. If the calculated pulse width signal is not plausible with the actual
	X		109	6D	Battery Voltage	Signal range check	Input analog Batt. Voltage Voltage	DME internally	Checks the Analog to Digital Converter. If the system can detect voltages lower than 2.5 Volts then a fault is set.
	X		110	6E	Torque limitation, level 1	Rationality check	DME internal values logical	DME internally	Internal check of the actual torque demand against a limit. If the limit is exceeded then a fault is set. The torque will be limited.
X			110	6E	Pedal Sensor 1	Signal range check	Input analog 0-5V Voltage	Pedal Sensor 1	Failed the Signal Range check against predefined diagnostic limits

Fault Code List OBDII
ULEV/LEV (MY01)

DME: MS43 (Siemens), ME7.2 (Bosch), M5.2.1 (Bosch)
Engines: M54, M62LEV, M73LEV

M54	M62	M73	FC dec	FC hex	Fault Type and Function	OBDII Requirement type of test	Signal type Signal range Detection of	Input/Output	Explanation
X			111	6F	Pedal Sensor 2	Signal range check	Input analog 0-2.5V Voltage	Pedal Sensor 2	Failed the Signal Range check against predefined diagnostic limits
		X	111	6F	Crankshaft Position Sensor, Malfunction	Rationality check	Input digital 0-12V Frequency/pattern	Crank sensor	Checks for correct signal pattern and correct number of expected flywheel teeth.
	X		111	6F	Crankshaft Position Sensor Malfunction	Rationality check	Input digital 0-12V Frequency/pattern	Crank sensor	A fault is set if a signal from the cam sensor is detected and there is no signal from the crank sensor (engine speed).
		X	112	70	Camshaft Position Sensor Circuit, Malfunction	Rationality check	Input digital 0-12V Frequency/pattern	Cam sensor	Internal check of the phase shift from the cam sensor which should change during every crankshaft revolution. The phase shift occurs due to the 2:1 mechanical relationship between cam
X			112	70	Throttle Position Sensor 1	Signal range check	Input analog 0-5V Voltage	Throttle position sensor 1	Failed the Signal Range check against predefined diagnostic limits
	X		112	70	Crankshaft Position Sensor Malfunction	Rationality check	Input digital 0-12V Frequency/pattern	Crank sensor	Checks for correct signal pattern and correct number of expected flywheel teeth.
	X		113	71	Camshaft Position Sensor Bank 1 Malfunction	Rationality check	Input digital 0-12V Frequency/pattern	CAM sensor	Internal check of the signal from the cam sensor. The signal state must change at every reference mark (2 missing teeth) of the crank.
X			113	71	Throttle Position Sensor 2	Signal range check	Input analog 0-5V Voltage	Throttle position sensor 2	Failed the Signal Range check against predefined diagnostic limits
X			114	72	A second pedal sensor range check failure is determined	Logical test	DME internal values logical	DME internally	Is on pedal sensor malfunction detected and later happens a second
	X		114	72	Camshaft Position Sensor Bank 2 Malfunction	Rationality check	Input digital 0-12V Frequency/pattern	CAM sensor	Internal check of the signal from the cam sensor. The signal state must change at every reference mark (2 missing teeth) of the crank.
	X	X	115	73	Mass or Volume Air Flow Circuit Malfunction	Signal range check	Input analog 0-6V Voltage	HFM	Failed the Signal Range check against predefined diagnostic limits
X			115	73	Range check for throttle position adaptation	Range check	Input analog 0-5V	Throttle position sensors	Range Check for the closed position of the throttle sensors
	X		117	75	Throttle Position Sensor	Rationality check	Input analog 0-5V Voltage	Throttle position sensor	This error occurs always together with fault code 118 or 119; the only additional information consists of more environmental conditions
		X	117	75	Throttle Position Sensor	Rationality check	DME internal values logical	Throttle position sensor	Signal Range is checked against the predetermined diagnostic limits. A fault will set if the Air Flow meter value (volume) does not logically match throttle position sensor value (throttle

Fault Code List OBDII
ULEV/LEV (MY01)

DME: MS43 (Siemens), ME7.2 (Bosch), M5.2.1 (Bosch)
Engines: M54, M62LEV, M73LEV

M54	M62	M73	FC dec	FC hex	Fault Type and Function	OBDII Requirement type of test	Signal type Signal range Detection of	Input/Output	Explanation
X			117	75	Pedal Sensor Plausibility	Rationality check	Input analog 0-5V Voltage	Pedal Sensor	If there is a difference greater than specified between the two redundant signals from the potentiometer, a fault will be set.
	X		118	76	Throttle Position Sensor 1	Rationality check	Input analog 0-5V Voltage	Throttle position sensor 1	Signal Range is checked against the predetermined diagnostic limits.Rationality check with Sensor 2. The sum of the values of Sensor 1 and Sensor 2 must be 5 V.
X			118	76	Throttle Position Sensor 1; Plausibility check sensor 1 to air flow mass meter	Rationality check	DME internally Test	Throttle position sensor 1	Signal Range is checked against the predetermined diagnostic limits.Rationality check with airflow mass meter
X			119	77	Throttle Position Sensor 2; Plausibility check sensor 1 to air flow mass meter	Rationality check	DME internally Test	Throttle position sensor 2	Signal Range is checked against the predetermined diagnostic limits.Rationality check with airflow mass meter
	X		119	77	Throttle Position Sensor 2	Rationality check	Input analog 0-5V Voltage	Throttle position sensor 2	Signal Range is checked against the predetermined diagnostic limits.Rationality check with Sensor 1. The sum of the values of Sensor 1 and Sensor 2 must be 5 V.
X			120	78	plausibility check between break switch and pedal sensor	Rationality check	Input digital / analog	Break switch, pedal sensor	Plausibility check between a constant padal value and break switch. First the padal value must be constant and for the next step break switch must be aktiv
		X	120	78	Vehicle Speed Sensor	Rationality check	Input digital 0-12V Frequency	ASC	Signal Range is checked against predefined diagnostic limits. No vehicle speed is observed after a specific time when compared to engine speed and load which is equivalent to a
	X		120	78	Vehicle Speed Sensor	Rationality check	Input digital 0-12V Frequency	ASC	No vehicle speed is observed for a specific time when the engine is in fuel cut off.
	X		121	79	Vehicle Speed Sensors	Rationality check	Input digital binary information from CAN	ASC	Plausibility check of wheel speed information from ASC
		X	121	79	Load Calculation Cross Check, Range/Perf.	Signal range check Rationality check	DME internal values logical	HFM, Throttle position sensor	Plausibility check between the Throttle Position Sensor Signal and the HFM.
X			122	7A	Oil Temperature sensor malfunction	Signal range check	Input analog 0-5V Voltage	Coolant Temp sensor	Signal Range is checked against the predefined diagnostic limits and the calculated temperature.
X			123	7B	Electric Thermostat Control, final stage	Final stage check	Output digital on/off (active low)	Electric Thermostat	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected component
	X	X	123	7B	Engine Coolant Temp Circuit Range/Perf.	Signal range check	Input analog 0-5V Voltage	Coolant Temp sensor	Signal Range is checked against the predefined diagnostic limits and the calculated temperature.
X			124	7C	DISA, Range/Performance	Final stage check	Output digital on/off (active low)	Disa Valve	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected component

Fault Code List OBDII
ULEV/LEV (MY01)

DME: MS43 (Siemens), ME7.2 (Bosch), M5.2.1 (Bosch)
Engines: M54, M62LEV, M73LEV

M54	M62	M73	FC dec	FC hex	Fault Type and Function	OBDII Requirement type of test	Signal type Signal range Detection of	Input/Output	Explanation
	X	X	124	7C	Intake Air Temperature Range/Performance	Signal range check	Input analog 0-5V Voltage	Intake Temp. sensor	Signal Range is checked against predefined diagnostic limits
X			125	7D	Coolant Fan, Final stage	Final stage check	Output digital pulse width (active low)	Coolant Fan	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected component
	X		125	7D	Coolant Temperature Cooler outlet	Signal range check	Input analog 0-5V Voltage	Coolant Temp sensor	Signal Range is checked against the predefined diagnostic limits.
X			126	7E	DMTL valve	Final Stage Check	Output digital on/off (active low)	DMTL	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected component
X			128	80	EWS Signal not present or faulty	DME HW Test SIO	Input binary stream 0-12V Bit information	EWS	During the time out check no signal was present within the specific time or faulty information from serial interface (parity, overrun, etc.)
		X	130	82	Swapped O2 Sensors Pre Cat.	O2-Sensor check	DME internal values logical	O2 Sensor	Fault will set if the O2 sensor from one bank shows a rich condition while the other bank shows a lean condition.
	X		130	82	Throttle valve position Throttle sticking	Rationality check	DME internal values logical	Motor Throttle Valve	Fault is set when the actual position of the throttle valve and the target positon don't match.
X			130	82	CAN Time Out (ASC1)	DME HW Test CAN	Input digital 0-12V Binary information	ASC	CAN message between DME/EGS was not received within the expected time
	X		131	83	Throttle valve position	Rationality check	DME internal values logical	Motor Throttle Valve	Fault is set if the position control reaches predefined threshold because of a slow moving throttle valve
X			131	83	CAN Time Out (instr2)	DME HW Test CAN	Input digital 0-12V Binary information	instr2	CAN message between DME/EGS was not received within the expected time
	X		132	84	Motor Throttle Valve Final stage	Rationality check	DME internal values logical	Motor Throttle Valve	Fault is set if the position control reaches predefined threshold and the final stage for the throttle motor indicates malfunction.
X			132	84	CAN Time Out (instr3)	DME HW Test CAN	Input digital 0-12V Binary information	instr3	CAN message between DME/EGS was not received within the expected time
	X		133	85	Motor Throttle Valve open/closing test failed	Rationality check	DME internal values logical	Motor Throttle Valve	pre drive check. Opening and closing of throttle must be fulfilled within a pre defined time (only small opening).
		X	133	85	DME Bank identification input	Rationality check	Input digital 0-12V on/off	Bank identification- pin wiring harness check	DME identifies itself as a DME_Right or DME_Left depending how the input signal is wired. If it determines that the "learned" value has changed then a fault is detected.

Fault Code List OBDII
ULEV/LEV (MY01)

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Engines: M54, M62LEV, M73LEV

M54	M62	M73	FC dec	FC hex	Fault Type and Function	OBDII Requirement type of test	Signal type Signal range Detection of	Input/Output	Explanation
X			133	85	CAN Time Out (ASC3)	DME HW Test CAN	Input digital 0-12V Binary information	ASC3	CAN message between DME/EGS was not received within the expected time
	X		134	86	Motor Throttle Valve closed position adaptation	Rationality check	DME internal values logical	Motor Throttle Valve	The closed position is within a pre defined limit. If this limit has been exceeded, this fault will be set. Also if there is a need for adaptation (after changing the throttle) and the adaptation is
	X		135	87	Motor Throttle Valve Amplifier adjustment	Rationality check	DME internal values logical	DME internally	The signal from throttle position sensor 1 is amplified to get better resolution in idle position. If there is a mismatch between the base sensor information and the amplified sensor this fault is
		X	135	87	Transmission: Torque Reduction	Rationality check	Input digital binary information from CAN	EGS	CAN message had an invalid or undefined value
X			135	87	Limp Home position adaptation necessary	Rationality check	DME internal values logical	Throttle position sensors	The limp home position must be within a specified range. If the range is exceeded, a fault is set. Also if the adaptation of the limp home position (part of the throttle adaptation) is interrupted the
	X		136	88	Motor Throttle Valve check of the limp home position	Rationality check	DME internal values logical	Motor Throttle valve	The limp home position must be within a specified range. If the range is exceeded, a fault is set. Also if the adaptation of the limp home position (part of the throttle adaptation) is interrupted the
X			136	88	Motor Throttle Valve open/closing test failed	Rationality check	DME internal values logical	Motor Throttle valve	From the limp home position the throttle valve will be open, afterwards it muß fallback in the limp home position. Is the fall back position not in specified range the fault is set.
		X	138	8A	AC Compressor Torque Reduction	Timing check	Input digital binary information from CAN	IHKA via K-Bus from the Instr. Cluster	Checks CAN message for proper content of pulse width modulation signal (>MY97)
		X	139	8B	Electric Thermostat Control, final stage	Final stage check	Output digital on/off (active low)	Electric Thermostat	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs
X			140	8C	DMTL pump final stage	EVAP monitoring	Output digital on/off (active low)	DMTL	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs
	X		140	8C	Electric Thermostat Control, final stage.	Final stage check	Output digital on/off (active low)	Electric Thermostat	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs
		X	140	8C	Torque imbalance	Rationality check	Input analog 0-5V Voltage	HFM1 and HFM2	Comparison between the 2 air mass signals. If the difference is too large then a fault is detected. Most likely cause is and air leak.
	X		141	8D	Coolant Fan Final stage	Final stage check	Output digital pulse width (active low)	Coolant Fan	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs
		X	141	8D	ASC Signal, Plausibility check	Rationality check	Input digital binary information from CAN	ASC	Internal check of binary signals from ASC/MSR/EML. The control unit knows what are the possible combinations of signals. If the combined signals don't match the internal table the fault will

Fault Code List OBDII
ULEV/LEV (MY01)

DME: MS43 (Siemens), ME7.2 (Bosch), M5.2.1 (Bosch)
Engines: M54, M62LEV, M73LEV

M54	M62	M73	FC dec	FC hex	Fault Type and Function	OBDII Requirement type of test	Signal type Signal range Detection of	Input/Output	Explanation
X			142	8E	DMTL modul fault	EVAP monitoring	DME internal values logical	Calculated	
X			143	8F	EVAP: Clamped Tube Check	EVAP monitoring	Input digital 0-12V Frequency	DMTLt	
		X	143	8F	MSR Signal	Timing check	Input digital binary information from CAN	ASC	Internal check of binary signals from ASC/MSR/EML. The control unit knows what are the possible combinations of signals. If the combined signals don't match the internal table the fault will
		X	144	90	ASC Signal, Plausibility Torque Reduction	Timing check	Input digital binary information from CAN	ASC	Internal check of binary signals from ASC/MSR/EML. The control unit knows what are the possible combinations of signals. If the combined signals don't match the internal table the fault will
X			146	92	Range check voltage supply pedal sensor 1 and throttle position sensors	range check	DME internal analog input	DME internally	The supply voltage for the senosrs must be within a spicified range.
		X	147	93	Electric Thermostat Control, Range/Performance.	Final stage check	Output digital on/off (active low)	Electric Thermostat	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs
X			147	93	Range check voltage supply for pedal sensor 2	range check	DME internal analog input	DME internally	The supply voltage for the senosrs must be within a spicified range.
	X	X	148	94	EWS Signal not present or faulty	DME HW Test SIO	Input binary stream 0-12V Bit information	EWS	During the time out check no signal was present within the specific time or faulty information from serial interface (parity, overrun, etc.)
X			149	95	Throttle Position and Air Mass Sensor Signal not plausible	Rationality check	Input analog 0-5V Voltage	Air Mass Sensor	The signal from the motor throttle valve potentiometer must be suitable to the signal from the air mass sensor. A fault is set if the difference exceeds a specified limit.
X			150	96	Signal range check O2 Sensor Pre Cat. (Bank1)	O2-Sensor check	Input analog 0-5V (high is lean)	O2-Sensor	The oxygen sensor signal range is checked to determine if electrical shorts exist on the input line. The voltage signal has to be within a predetermined range (0,1V - 1V) or a fault will set.
	X	X	150	96	Injector Circuit Cylinder 1 Malfunction	Final stage check	Output digital pulse width (active low)	Injector	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs
X			151	97	Signal range check O2 Sensor Pre Cat. (Bank2)	O2-Sensor check	Input analog 0-5V	O2-Sensor	The oxygen sensor signal range is checked to determine if electrical shorts exist on the input line. The voltage signal has to be within a predetermined range (0,1V - 1V) or a fault will set.
		X	151	97	Injector Circuit Cylinder 2, Malfunction	Final stage check	Output digital pulse width (active low)	Injector	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs
	X		151	97	Injector Circuit Cylinder 5 Malfunction	Final stage check	Output digital pulse width (active low)	Injector	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs

Fault Code List OBDII
ULEV/LEV (MY01)

DME: MS43 (Siemens), ME7.2 (Bosch), M5.2.1 (Bosch)
Engines: M54, M62LEV, M73LEV

M54	M62	M73	FC dec	FC hex	Fault Type and Function	OBDII Requirement type of test	Signal type Signal range Detection of	Input/Output	Explanation
X			152	98	Signal range check O2 Sensor Post Cat. (Bank1)	O2-Sensor check	Input analog 0-5V	O2-Sensor	The oxygen sensor signal range is checked to determine if electrical disconnection exist on the input line. The voltage signal has not to be clamped to the specific internally value
		X	152	98	Injector Circuit Cylinder 3, Malfunction	Final stage check	Output digital pulse width (active low)	Injector	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs
	X		152	98	Injector Circuit Cylinder 4 Malfunction	Final stage check	Output digital pulse width (active low)	Injector	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs
X			153	99	Signal range check O2 Sensor Post Cat. (Bank2)	O2-Sensor check	Input analog 0-5V	O2-Sensor	The oxygen sensor signal range is checked to determine if electrical shorts exist on the input line. The voltage signal has to be within a predetermined range (0,1V - 1V) or a fault will set.
		X	153	99	Injector Circuit Cylinder 4, Malfunction	Final stage check	Output digital pulse width (active low)	Injector	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs
	X		153	99	Injector Circuit Cylinder 8 Malfunction	Final stage check	Output digital pulse width (active low)	Injector	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs
		X	154	9A	Injector Circuit Cylinder 5, Malfunction	Final stage check	Output digital pulse width (active low)	Injector	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs
	X		154	9A	Injector Circuit Cylinder 6 Malfunction	Final stage check	Output digital pulse width (active low)	Injector	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs
		X	155	9B	Injector Circuit Cylinder 6, Malfunction	Final stage check	Output digital pulse width (active low)	Injector	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs
	X		155	9B	Injector Circuit Cylinder 3 Malfunction	Final stage check	Output digital pulse width (active low)	Injector	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs
		X	156	9C	Injector Circuit Cylinder 7, Malfunction	Final stage check	Output digital pulse width (active low)	Injector	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs
	X		156	9C	Injector Circuit Cylinder 7 Malfunction	Final stage check	Output digital pulse width (active low)	Injector	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs
		X	157	9D	Injector Circuit Cylinder 8, Malfunction	Final stage check	Output digital pulse width (active low)	Injector	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs
	X		157	9D	Injector Circuit Cylinder 2 Malfunction	Final stage check	Output digital pulse width (active low)	Injector	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs

Fault Code List OBDII
ULEV/LEV (MY01)

DME: MS43 (Siemens), ME7.2 (Bosch), M5.2.1 (Bosch)
Engines: M54, M62LEV, M73LEV

M54	M62	M73	FC dec	FC hex	Fault Type and Function	OBDII Requirement type of test	Signal type Signal range Detection of	Input/Output	Explanation
		X	158	9E	Injector Circuit Cylinder 9, Malfunction	Final stage check	Output digital pulse width (active low)	Injector	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs
		X	159	9F	Injector Circuit Cylinder 10, Malfunction	Final stage check	Output digital pulse width (active low)	Injector	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs
X			160	A0	Throttle valve position controller	controller monitoring	DME internal values logical	throttle valve DME internal	
		X	160	A0	Injector Circuit Cylinder 11, Malfunction	Final stage check	Output digital pulse width (active low)	Injector	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs
X			161	A1	Throttle valve position controller	controller monitoring	DME internal values logical	throttle valve DME internal	
		X	161	A1	Injector Circuit Cylinder 12, Malfunction	Final stage check	Output digital pulse width (active low)	Injector	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs
X			162	A2	Throttle valve position controller	controller monitoring	DME internal values logical	throttle valve DME internal	
		X	163	A3	Electric Fuel Pump Relay, Final stage (Bank 2)	Final stage check	Output digital on/off (active low)	Fuel pump relay	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs
	X		163	A3	plausibility check between air mass meter and throttle position	Rationality check	DME internal values logical	HFM, Throttle position sensor	Plausibility check between the Throttle Position Sensor Signal and the HFM.
		X	164	A4	EVAP: Barometric Tank Pressure Sensor	Signal range check	Input analog 0-5V Voltage	Tank pressure sensor	The Signal Range is checked to detect shorts on the input line
	X		164	A4	Barometric Pressure Sensor	Signal range check	Input analog 0-5V Voltage	barometric pressure sensor inside the ECU	The Signal Range is checked to detect faults on the input line
		X	165	A5	Check Engine Light, Final stage Malfunction	Final stage check	Output digital on/off (active low)	Instrument Cluster	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs
	X		165	A5	VANOS electrical fault Bank 1	Final stage check	Output digital on/off (active low)	VANOS valve	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs
	X		166	A6	VANOS electrical fault Bank 2	Final stage check	Output digital on/off (active low)	VANOS valve	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs

Fault Code List OBDII
ULEV/LEV (MY01)

DME: MS43 (Siemens), ME7.2 (Bosch), M5.2.1 (Bosch)
Engines: M54, M62LEV, M73LEV

M54	M62	M73	FC dec	FC hex	Fault Type and Function	OBDII Requirement type of test	Signal type Signal range Detection of	Input/Output	Explanation
	X	X	167	A7	Electric Fuel Pump Relay Final stage	Final stage check	Output digital on/off (active low)	Fuel pump relay	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs
		X	168	A8	Idle Control Valve Opening Coil, Malfunction	Final stage check	Output digital pulse width (active low)	Idle control valve	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs
X			168	A8	Throttle valve position Throttle sticking	Functional check	DME internally Test	Calculated	
		X	169	A9	Idle Control Valve Closing Coil, Malfunction	Final stage check	Output digital pulse width (active low)	idle control valve	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs
	X	X	170	AA	AC Compressor Control	Final stage check	Output digital on/off (active low)	AC Comp.	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. Occurs
		X	175	AF	DISA, Range/Performance	Final stage check	Output digital on/off (active low)	Disa Valve	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs
		X	179	B3	AC Compressor Control (Bank 2)	Final stage check	Output digital on/off (active low)	AC-Control	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs
	X	X	183	B7	EVAP: Leak detected	EVAP monitoring	Input digital 0-12V Frequency	LDP reed contact	The frequency of the LDP pumps reed switch is above the predetermined leak range. The larger the leak the higher the frequency will be.
	X	X	184	B8	EVAP: pinched hose check	EVAP monitoring	Input digital 0-12V Frequency	LDP reed contact	The frequency of the LDP pumps reed switch is lower then the predetermined limit. The volume of leak is determined to be too small as in a pinched or restricted hose.
	X		185	B9	EVAP: Reed Switch	EVAP monitoring	Input digital 0-12V on/off	LDP reed contactswitch	Within a predetermined time the LDP reed switch signal has to change from high to low or from low to high or LDP reed switch is "low" for longer then the predetermined time.
X			188	BC	O2-Sensor-Heater, Pre Cat. (Bank1), insufficient.	Final stage check	Output digital pulse width (active low)	O2 Sensor	The DME internally calculated heater power is checked against predefined diagnostic limits.
X			189	BD	O2-Sensor-Heater, Pre Cat. (Bank2), insufficient.	Final stage check	Output digital pulse width (active low)	O2 Sensor	The DME internally calculated heater power is checked against predefined diagnostic limits.
X			190	BE	O2-Sensor-Heater, Post Cat. (Bank1), insufficient.	Final stage check	Output digital pulse width (active low)	O2 Sensor	The DME internally calculated heater power is checked against predefined diagnostic limits.
X			191	BF	O2-Sensor-Heater, Post Cat. (Bank2), insufficient.	Final stage check	Output digital pulse width (active low)	O2 Sensor	The DME internally calculated heater power is checked against predefined diagnostic limits.

Fault Code List OBDII
ULEV/LEV (MY01)

DME: MS43 (Siemens), ME7.2 (Bosch), M5.2.1 (Bosch)
Engines: M54, M62LEV, M73LEV

M54	M62	M73	FC dec	FC hex	Fault Type and Function	OBDII Requirement type of test	Signal type Signal range Detection of	Input/Output	Explanation
X			197	C5	Signal Range check	Signal range check	DME intern analog input	Umgebungsdrucksensoren	Analogsignal des Umgebungsdrucksensors liegt außerhalb des spezifizierten Wertes
X			202	CA	Fuel Trim (Bank1), O2 Control Limit	Fuel system monitoring	DME internal values logical	Calculated	The Controller for Lambda is too long beyond a min. or a max. limit
X			203	CB	Fuel Trim (Bank2), O2 Control Limit	Fuel system monitoring	DME internal values logical	Calculated	The Controller for Lambda is too long beyond a min. or a max. limit
		X	203	CB	Ignition Feedback (bank failed)	Ignition feedback	Input analog 100 mV Timing	Ignition Shunt Resistor	Check for correct signal timing after each ignition has been initiated by this feedback signal
	X		186	BA	EVAP: DMTL Pump Motor - Final Stage	Final stage check	Output digital on/off (active low)	DMTL pump motor	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs
	X		187	BB	EVAP: 0.5 mm leak detected	EVAP monitoring	DME internal values logical	DMTL pump motor current	The current of the pump motor is monitored. If the current does not reach predefined thresholds after a given time, this is a indication of a leak;
	X		188	BC	EVAP: 1 mm leak detected	EVAP monitoring	DME internal values logical	DMTL pump motor current	The current of the pump motor is monitored. If the current does not reach predefined thresholds after a given time, this is a indication of a leak;
	X		189	BD	EVAP: DMTL module	EVAP monitoring	DME internal values logical	DMTL module	The pump motor current is monitored, especially during the reference leak measurement. If the current is not in a predefined range a fault is set.
	X	X	204	CC	EWS, rolling code storage	DME HW-Test	DME internal values logical	EWS	The EWS3.3 rolling code is not stored properly in the DME internal memory
X			204	CC	Idle Control System, Idle Speed not plausible	Rationality check	DME internal values logical	calculated	Functional Check between the actual engine speed (RPM) and the predetermined RPM exceeds the maximum deviation of +200/-100 RPM.
		X	208	D0	Secondary Air Induction System (Bank 2)	Secondary Air Delivery	Input analog 0-1V Voltage	O2 Sensor	Checks to see if the O2 sensor reacts to the increase in unmetered air flow generated by the secondary air pump operation. The O2 sensor must sense the lean condition or a
X			209	D1	EWS, Content of Message	Manipulation check	Input binary stream 0-12V Bit information	EWS	The content of the binary message received from EWS was invalid
	X	X	210	D2	Knock Sensor 1 Circuit Bank 1	Circuit continuity Signal range check	Input analog 13-19kHz Amplitude	Knock sensor	Plausibility Check between the knock sensor amplitude during knocking with the internal knock detection mapped DME values.
X			210	D2	Ignition Feedback, faulty (>2 Cylinders)	Ignition feedback	Input analog 100 mV Timing	Ignition Shunt Resistor	Check for correct signal timing after each ignition has been initiated by this feedback signal. If more than two ignition is not recognized than there might be a problem in the feedback line

Fault Code List OBDII
ULEV/LEV (MY01)

DME: MS43 (Siemens), ME7.2 (Bosch), M5.2.1 (Bosch)
Engines: M54, M62LEV, M73LEV

M54	M62	M73	FC dec	FC hex	Fault Type and Function	OBDII Requirement type of test	Signal type Signal range Detection of	Input/Output	Explanation
	X	X	211	D3	Knock Sensor 2 Circuit Bank 2	Circuit continuity Signal range check	Input analog 13-19kHz Amplitude	Knock sensor	Plausibility Check between the knock sensor amplitude during knocking with the internal knock detection mapped DME values.
X			211	D3	Idle Control Valve stuck mechanically	Rationality check	DME internal values logical	calculated	Functional Check against a calculated value by monitoring the flow though the air mass meter to determine is the idle valve is mechanically stuck open. Tested during closed throttle
	X	X	212	D4	Knock Sensor 3 Circuit	Circuit continuity Signal range check	Input analog 13-19kHz Amplitude	Knock sensor	Plausibility Check between the knock sensor amplitude during knocking with the internal knock detection mapped DME values.
	X	X	213	D5	Knock Sensor 4 Circuit	Circuit continuity Signal range check	Input analog 13-19kHz Amplitude	Knock sensor	Plausibility Check between the knock sensor amplitude during knocking with the internal knock detection mapped DME values.
	X		214	D6	Knock control, Base test	Rationality check	DME internal values logical	DME internally	The ECU checks internal values with disconnected sensor. The values must be in a predetermined range.
X			214	D6	Vehicle Speed Sensor	Rationality check	Input digital 0-12V Frequency	ASC	Signal Range is checked against predefined diagnostic limits. No vehicle speed is observed after a specific time when compared to engine speed and load which is equivalent to a moving vehicle.
		X	214	D6	CAN-Index Verification	CAN message check	Input digital 0-12V Binary information	Any ECU on CAN	Logical check of every ECU on the CAN bus has a CAN message interpretation (refer to CAN-Index on the DIS-Tester page) that applies to the vehicle
X			215	D7	O2 Sensor Post Cat.(Bank1),disconnection	O2-Sensor check	Input analog 0-1 V	O2-Sensor	The oxygen sensor signal range is checked to determine if electrical disconnection exist on the input line. The voltage signal has not to be clamped to the specific internally value
		X	215	D7	CAN-Signal, Timeout Left / Right DME	Timing check	Input digital 0-12V Binary information	both DMEs	The Left DME will check for the Right DME and vice versa. If the CAN message was not received by either within the Expected time a fault will set.
	X		215	D7	Knock control, Signal offset	Rationality check	DME internal values logical	Knock sensor	The ECU checks internal values with disconnected sensor. The values must be in a predetermined range.
X			216	D8	O2 Sensor Post Cat.(Bank2),disconnection	O2-Sensor check	Input analog 0-1 V	O2-Sensor	The oxygen sensor signal range is checked to determine if electrical disconnection exist on the input line. The voltage signal has not to be clamped to the specific internally value
	X		216	D8	Knock control, Test pulse	Rationality check	DME internal values logical	DME internally	The ECU internally generated pulse was not detected. It is used to verify electrical integrity (shorts or disconnection) of the knock control circuitry both internally and externally.
		X	216	D8	CAN Signal, Timeout ASC	Timing check	Input digital 0-12V Binary information	ASC	The CAN message was not received within the Expected time

Fault Code List OBDII
ULEV/LEV (MY01)

DME: MS43 (Siemens), ME7.2 (Bosch), M5.2.1 (Bosch)
Engines: M54, M62LEV, M73LEV

M54	M62	M73	FC dec	FC hex	Fault Type and Function	OBDII Requirement type of test	Signal type Signal range Detection of	Input/Output	Explanation
		X	217	D9	CAN-Signal, Timeout EML	Timing check	Input digital 0-12V Binary information	EML ECU	The CAN message was not received within the Expected time
X			217	D9	CAN Time Out (EGS1)	DME HW Test CAN	Input digital 0-12V Binary information	EGS	CAN message between DME/EGS was not received within the expected time
X			219	DB	CAN-Chip, Bus Off	DME HW Test CAN	Input digital 0-12V Binary information	Any ECU on CAN	Hardware test determines if Can Bus is off line. Data transmission is disturbed.
		X	220	DC	Knock control, Test pulse	Circuit Continuity Signal range check	DME internal values logical	DME internally	The ECU internally generated pulse was not detected. It is used to verify electrical integrity (shorts or disconnection) of the knock control circuitry both internally and externally.
X			220	DC	O2 Sensor Post Cat. (Bank1) Slow Response time	O2-Sensor check	Input analog 0-5V (high is lean)	O2 Sensor	Checks the amount of time the oxygen sensor stays in its rich or lean state. If it remains there too long in either the fault will set.
	X		220	DC	CAN Time Out (EGS)	DME HW Test CAN	Input digital 0-12V Binary information	EGS	CAN message between DME/EGS was not received within the expected time
	X		219	DB	CAN Time Out (TCU)	DME HW Test CAN	Input digital 0-12V Binary information	TCU transfer box controller	CAN message between DME/TCU was not received within the expected time
X			221	DD	O2 Sensor Post Cat. (Bank2) Slow Response time	O2-Sensor check	Input analog 0-5V (high is lean)	O2 Sensor	Checks the amount of time the oxygen sensor stays in its rich or lean state. If it remains there too long in either the fault will set.
	X		221	DD	CAN Time Out (DSC)	DME HW Test CAN	Input digital 0-12V Binary information	DSC	CAN message between DME/DSC was not received within the expected time
		X	222	DE	Knock control, Test pulse (Bank2)	Circuit Continuity Signal range check	DME internal values logical	DME Internally	The ECU internally generated pulse was not detected. It is used to verify electrical integrity (shorts or disconnection) of the knock control circuitry both internally and externally.
X			222	DE	Insufficient Coolant Temp. to permit Closed Loop Operation.	Rationality check	Input analog 0-5V Voltage	Coolant Temp sensor	Comparison of actual coolant temperature against the calculated DME value which varies with the load signal.
	X		222	DE	CAN Time Out (instr)	DME HW Test CAN	Input digital 0-12V Binary information	instr	CAN message between DME/Instrument cluster was not received within the expected time
X			223	DF	O2-Sensor Post Cat (Bank 1), Switching time too slow	O2-Sensor check	Input analog 0-5V (high is lean)	O2 Sensor	Checks the amount of time the oxygen sensor takes to switch from rich to lean and vice versa. If it takes too long to switch the fault will set.
	X		223	DF	CAN Time Out (ACC)	DME HW Test CAN	Input digital 0-12V Binary information	ACC	CAN message between DME/ACC (Adaptive cruise control) was not received within the expected time

Fault Code List OBDII
ULEV/LEV (MY01)

DME: MS43 (Siemens), ME7.2 (Bosch), M5.2.1 (Bosch)
Engines: M54, M62LEV, M73LEV

M54	M62	M73	FC dec	FC hex	Fault Type and Function	OBDII Requirement type of test	Signal type Signal range Detection of	Input/Output	Explanation
	X		224	E0	MSR Signal, Plausibility Torque Rising	Rationality check	Input digital binary information from CAN	DSC	Internal check of DSC signals sent for torque rising. A certain combination of signals is necessary to allow a torque interference. If DSC does not send this combination, a fault is set.
X			224	E0	O2-Sensor Post Cat (Bank 2), Switching time too slow	O2-Sensor check	Input analog 0-5V (high is lean)	O2 Sensor	Checks the amount of time the oxygen sensor takes to switch from rich to lean and vice versa. If it takes too long to switch the fault will set.
X			225	E1	Post Cat. Sensor Bank 1;Trim control	O2-Sensor check	Input analog 0-1V	O2-Sensor	Rationality Check for O2 Control adaptation with post catalyst sensor bank 1
		X	225	E1	EKAT-Status 12 - temperature sensor - plausibility power switch	Electrically heated catalyst check	Input digital binary information from CAN	EKAT-ECU	Plausibility check between the two temperature sensors in the power switch
	X		225	E1	ACC Signal Plausibility Torque Rising	Timing check	DME internal values logical	ACC	Internal check of ACC signals sent for torque rising. A certain combination of signals is necessary to allow a torque interference. If ACC does not send this combination, a fault is set.
X			226	E2	Post Cat. Sensor Bank 2;Trim control	O2-Sensor check	Input analog 0-1V	O2-Sensor	Rationality Check for O2 Control adaptation with post catalyst sensor bank 2
		X	226	E2	EKAT-Status 13 - power switch voltage plausibility	Electrically heated catalyst check	Input digital binary information from CAN	EKAT-ECU	Plausibility check between the two input voltages for heater 1 and 2
		X	227	E3	EKAT-Status 14 - check of battery disconnection switch	Electrically heated catalyst check	Input digital binary information from CAN	EKAT-ECU	Set, if a short to ground, a short to battery voltage or a disconnection between the output transistor and the battery disconnection switch occurs
X			227	E3	Fuel Trim (Bank1), O2 Control Adaptation Limit	Fuel system monitoring	DME internal values logical	Calculated	Range control of adaptation values
		X	228	E4	Automatic Start, Output (Bank 2)	Final stage check	Output digital on/off (active low)	Starter Relay	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<<2A).
X			228	E4	Fuel Trim (Bank2), O2 Control Adaptation Limit	Fuel system monitoring	DME internal values logical	Calculated	Range control of adaptation values
X			229	E5	O2 Sensor Pre Cat. (Bank1) Slow Response time	O2-Sensor check	Input analog 0-5V (high is lean)	O2 Sensor	Checks the amount of time the oxygen sensor stays in its rich or lean state. If it remains there too long in either the fault will set.
	X		229	E5	Pedal Sensor Voltage Supply	Signal range check	Output analog 0-5V	Pedal Sensor	The control module monitors the supply voltage of the pedal sensors: The nominal value must be 5V.
	X		230	E6	Pedal Sensor	Rationality check	Input analog 0-5V	Pedal Sensor	This fault is always set together with fault #231 and/or fault #232. It delivers additional environmental conditions.

Fault Code List OBDII
ULEV/LEV (MY01)

DME: MS43 (Siemens), ME7.2 (Bosch), M5.2.1 (Bosch)
Engines: M54, M62LEV, M73LEV

M54	M62	M73	FC dec	FC hex	Fault Type and Function	OBDII Requirement type of test	Signal type Signal range Detection of	Input/Output	Explanation
X			230	E6	O2 Sensor Pre Cat. (Bank2) Slow Response time	O2-Sensor check	Input analog 0-5V (high is lean)	O2 Sensor	Checks the amount of time the oxygen sensor stays in its rich or lean state. If it remains there too long in either the fault will set.
	X		231	E7	Pedal Sensor 1	Signal range check	Input analog 0-5V	Pedal Sensor 1	Failed the Signal Range check against predefined diagnostic limits. Also when the pedal sensor signal from Sensor 1 has not the double value of Sensor 2 a fault code is set.
X			231	E7	O2-Sensor Pre Cat (Bank 1), Switching time too slow	O2-Sensor check	Input analog 0-5V (high is lean)	O2 Sensor	Checks the amount of time the oxygen sensor takes to switch from rich to lean and vice versa. If it takes too long to switch the fault will set.
	X		232	E8	Pedal Sensor 2	Signal range check	Input analog 0-5V	Pedal Sensor 2	Failed the Signal Range check against predefined diagnostic limits. Also when the pedal sensor signal from Sensor 2 has not half the value of Sensor 1 a fault code is set.
X			232	E8	O2-Sensor Pre Cat (Bank 2), Switching time too slow	O2-Sensor check	Input analog 0-5V (high is lean)	O2 Sensor	Checks the amount of time the oxygen sensor takes to switch from rich to lean and vice versa. If it takes too long to switch the fault will set.
	X	X	233	E9	Automatic Start Final stage	Final stage check	Output digital on/off (active low)	Starter Relay	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<i<2A).
X			233	E9	Catalyst Efficiency Bank 1, Below Threshold	Catalyst monitoring	Input analog 0-5V Voltage	O2 Sensor pre/post catalyst	Compares the value of the of pre cat O2 sensor to value of the post cat O2 sensor to measure the oxygen storage capability / efficiency of the catalytic converter. The post O2 sensor must be relatively lean.
	X	X	234	EA	Automatic Start Input	Rationality check	Input digital 0-12V on/off	KL50	Fault will set if after a predetermined time K148engine revolution is greater than a limit and KI50 still active
X			234	EA	Catalyst Efficiency Bank 2, Below Threshold	Catalyst monitoring	Input analog 0-5V Voltage	O2 Sensor pre/post catalyst	Compares the value of the of pre cat O2 sensor to value of the post cat O2 sensor to measure the oxygen storage capability / efficiency of the catalytic converter. The post O2 sensor must be relatively lean.
X			235	EB	Pre Cat. Sensor Bank 1:Trim Control	O2-Sensor check	Input analog 0-1V (high is rich)	O2-Sensor	Rationality Check for O2 Control adaptation with pre catalyst sensor bank 1
X			236	EC	Pre Cat. Sensor Bank 2:Trim Control	O2-Sensor check	Input analog 0-1V (high is rich)	O2-Sensor	Rationality Check for O2 Control adaptation with pre catalyst sensor bank 2
		X	236	EC	CAN Time Out (EGS)	DME HW Test CAN	Input digital 0-12V Binary information	EGS	CAN message between DME/EGS was not received within the expected time
	X		237	ED	Automatic Start	Rationality check	DME internal values logivcal	Starter Relay	Fault will set if there is a engine speed detected prior to the engaging of the starter relay by the DME.

Fault Code List OBDII
ULEV/LEV (MY01)

DME: MS43 (Siemens), ME7.2 (Bosch), M5.2.1 (Bosch)
Engines: M54, M62LEV, M73LEV

M54	M62	M73	FC dec	FC hex	Fault Type and Function	OBDII Requirement type of test	Signal type Signal range Detection of	Input/Output	Explanation
X			238	EE	Cylinder 1 Misfire detected	Misfire monitoring	DME internal values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 1 is longer the fault will set.
X			239	EF	Cylinder 2 Misfire detected	Misfire monitoring	DME internal values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 2 is longer the fault will set.
X			240	F0	Cylinder 3 Misfire detected	Misfire monitoring	DME internal values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder3 is longer the fault will set.
X			241	F1	Cylinder 4 Misfire detected	Misfire monitoring	DME internal values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 4 is longer the fault will set.
X			242	F2	Cylinder 5 Misfire detected	Misfire monitoring	DME internal values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 5 is longer the fault will set.
X			243	F3	Cylinder 6 Misfire detected	Misfire monitoring	DME internal values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 6 is longer the fault will set.
X			244	F4	Segment Timing faulty- Flywheel adaptation	Rationality check	Input digital 0-12V Timing	Crank sensor	The flywheel segments are monitored during deceleration to establish a baseline for misfire calculation. If the segments are too long/short (bad flywheel) and exceed the limit a fault will set or one tooth too much/less.
X			245	F5	Secondary Air Injection (Bank1),Flow too Low	Secondary Air Delivery	Input analog 0-5V Voltage	O2-Sensor signal	Checks to see if the O2 sensor reacts to the increase in unmetered airflow generated by the secondary air pump operation. The O2 sensor must sense the lean condition or a fault will set.
X			246	F6	Secondary Air Injection (Bank2),Flow too Low	Secondary Air Delivery	Input analog 0-5V Voltage	O2-Sensor signal	Checks to see if the O2 sensor reacts to the increase in unmetered airflow generated by the secondary air pump operation. The O2 sensor must sense the lean condition or a fault will set.
X			247	F7	Secondary Air Valve stuck open	Secondary Air Delivery	Input analog 0-5V Voltage	O2-Sensor signal	Checks to see if the O2 sensor reacts to the increase in unmetered airflow generated by the secondary air pump operation. The O2 sensor must sense the lean condition or a fault will set.
X			248	F8	Post Catalyst Sensor ;signal after decel phase not plausible; bank 1 (sensor 3)	O2-Sensor check	Input analog 0-5 V	O2-Sensor	Signal is checked for a lean signal in decel and a transition between lean to rich after decel

